

USSR

GRIGELIYONIS, B.

"The Absolute Continuity of Measures Corresponding to Random Processes"

Lit. mat. sb. [Lithuanian Mathematics Collection], Vol 11, No 4, 1971,
pp 783-794, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972,
Abstract No 3 V39 by the author).

Translation: Conditions are found for absolute continuity of measures corresponding to a broad class of random processes, in particular including many random processes which are components of multidimensional Markov processes, and formulas are produced for their densities. Conditions are also studied under which a multiplicative functional of a given random process is the density of the probability measures.

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USSR

UDC: 519.21

GRIGELIONIS, B.

"On Representation of Whole-Number Random Measures as Stochastic Integrals With Respect to a Poisson Measure"

Lit. mat. sb. (Lithuanian Mathematics Collection), 1971, 11, No 1, pp 93-108
(from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V65)

Translation: A sequence of $m+1$ -dimensional random vectors (τ_k, X_k) , $k \geq 1$ is given, where $0 < \tau_k < \infty$, $X_k \in R_m$. The whole-number random measure p is de-

fined by the equation $p(A) = \sum_{k=1}^{\infty} \chi_A(\tau_k, X_k)$, where A is any $m+1$ -dimensional

Borel set, χ is the eigenfunction symbol. Conditions are determined for which the representation

$$p(t, \Gamma) = \int_0^t \int_{R_m} \chi_{\Gamma}(\varphi(s, x)) \tilde{p}(ds, dx)$$

holds, where $p(t, \Gamma) = p(\{0, t\} \times \Gamma)$, \tilde{p} is some Poisson measure, φ is a random function with values in R_m , the integral is defined in the Ito sense.

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USSR

GRIGELIONIS, B. I.

"Stochastic Equations for Nonlinear Filtration of Random Processes"

Lit. Mat. Sb. [Lithuanian Mathematics Collection], 1972, Vol 12, No 4, pp 37-51 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V110, by the author).

Translation: The theory of stochastic integration of martingales is used to produce stochastic equations for nonlinear filtration in the case when the observed random process has no second order discontinuities, but has a very general structure, together with an unobserved random process.

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USSR

GRIGELIYONIS, B. I.

"The Problem of Sufficient Statistics for Problems of the Optimal Stopping of Random Processes"

Lit. mat. sb. [Lithuanian Mathematics Collection], Vol 11, No 3, 1971, pp 529-533, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V135 by the author).

Translation: The general problem of optimal stopping is studied in the case of continuous time. Conditions are found under which a fixed system of σ algebras is sufficient, as well as conditions under which the fixed system of statistics is a sufficient or Markov sufficient system of statistics.

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Stress, Strain, and Deformation

USSR

UDC 539.3

GRIGOLYUK, E. I., Corresponding Member of the Academy of Sciences USSR, and
PELEKH, B. L., Scientific Research Institute of Mechanics of Moscow State
University imeni M. V. Lomonosov, Physicomechanical Institute of the Academy
of Sciences Ukrainian SSR, L'vov

"Static-Geometric Analogy and Complex Transformation in the Theory of Three-
Layered Shells With a Light Core"

Moscow, Doklady Akademii Nauk SSSR, Vol 207, No 3, 1972, pp 563-565

Abstract: The article extends V. V. NOVOZHILOV's complex method to the theory
of three-layered shells with a light core on the basis of a generalization of
static-geometric analogy. Equations are obtained which can be used as the
basis for a study of the stressed-strained state of three-layered shells with
a light core.

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USSR

UDC 533.6.013.42

GORSHKOV, A. G., GRIGOLYUK, E. I.

"Nonstationary Problems in the Theory of Shells Loaded in a Liquid"

V sb. Nauch. konf. in-t mekh. Mosk. un-ta, Moskva, 22-24 maya 1972 g.
Tezisy dokl. (Scientific Conference. Institute of Mechanics of Moscow
University, Moscow, 22-24 May 1972. Topics of Papers -- Collection of
Works), Moscow, 1972, p 15 (from RZh-Mekhanika, No 8, Aug 72, Abstract
No 8V299)

Translation: The stress and deformation state of a thin elastic cylindrical shell with rigid elements on which an axial shock wave of low intensity is incident (the wave front is plane) is investigated. Rigid bodies of rotation are fastened at the ends of the shell (a sphere, cylinder, cone, paraboloid of rotation). There are additional concentrated loads inside the shell on the axis of symmetry which are connected with the end frames of the shell by elastic springs and dampers. The fluid is considered an ideal acoustical medium. The hydrodynamic forces are determined approximately on the basis of a linear approximation of the transfer functions $\psi(\tau)$ for pressure. Refined equations from the theory of thin shells for finite bending considering transverse shifts and the inertia of rotation.

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USSR

GORSHKOV, A. G., GRIGOLYUK, E. I., Nauch. konf. in-t mekh. Mosk. un-ta, Moskva, 22-24 maya 1972 g. Tezisy dokl., Moscow, 1972, p 15

are applied in compiling the equations of motion of the entire structure. The resulting system of equations is iterated numerically by finite differences and the Kutta-Merson method. Calculations were made for stepped waves and for waves of exponential profile. The effect of the basic parameters of the shell on the characteristics of the reaction was studied.

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USSR

GRIGOLYUK, E. I., KORNEV, V. M.

"Asymptotic Study of Equations for Asymmetrical Bending of a Multilayer Cylindrical Envelope"

Teoriya Plastin i Obolochek [Theory of Plates and Envelopes -- Collection of Works], Moscow, Nauka Press, 1971, pp 74-82, (Translated from Referativnyy Zhurnal, Mekhanika, No 4, 1972, Abstract No 4 V147 by the author's).

Translation: A study is made of strength calculation of a circular cylindrical multilayer envelope, semi-infinite with arbitrary oscillation of the stress-strain state. It is considered that the envelope is loaded at the end by a self-balanced system of forces. Following separation of variables, depending on the number of waves, asymptotic analysis of the resolving equation is performed around the circular coordinate. It is found that the solution consists of a main portion and a supplementary portion (edge effect). The edge effect in a multilayer cylindrical envelope differs from the edge effect in a homogeneous structure both as to rate of attenuation and as to form (with certain values of parameters, it stops oscillating).

Boundary conditions are formulated for the main portion of the solution as functions of the oscillation of the stress-strain state. The main portion of the solution is adjusted by the edge effect. Specific examples are given

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GRIGOLYUK, E. I., KORNEV, V. M., Teoriya Plastin i Obolochek, Moscow, Nauka Press, 1971, pp 74-82.

of the formulation of the boundary conditions for the main and supplementary portions of the solution with a fixed oscillation of the solution around the circular coordinate. The asymptotic method of construction of the solutions of the equations of homogeneous and layered envelopes used is quite effective. 9 Biblio. Refs.

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USSR

GRIGOLYUK, E. I., BURAK, Ya. I., PODSTRIGACH, Ya. S.

"The Statement and Solution of One Class of Extreme Problems of Thermoelasticity for Envelopes of Rotation"

Teoriya Platin i Obolochek [Theory of Plates and Envelopes -- Collection of Works], Moscow, Nauka Press, 1971, pp 66-73, (Translated from Referativnyy Zhurnal, Mekhanika, No 4, 1972, Abstract No 4 V158 by the author's).

Translation: The optimal temperature fields are defined in envelopes of rotation which, within fixed limitations on temperature field and stress-strain state, provide a comparatively low level of thermal stresses. Using the methods of the calculus of variations, the statement and solution of these problems can be reduced to analysis of non-classical problems on the conditional extreme, when the limitations on permissible functions (heating conditions) are fixed not for the entire area of the envelope, but for a system of non-intersecting subareas and contours. In this case, the condition of the minimum integral measure of the thermoelastic state -- a functional of the elastic energy of the envelope -- is used as an integral condition of optimality.

The Euler equations produced, together with the solution equations and boundary conditions, make up a complete set of equations for determination
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GRIGOLYUK, E. I., BURAK, Ya. I., PODSTRIGACH, Ya. S., Teoriya Plastin i Obolochek, Moscow, Nauka Press, 1971, pp 66-73.

of the extreme temperature fields and the corresponding thermal-elastic state of the envelope. Supplementary equations are produced for the characteristic particular forms of extreme problems for direct determination of the extreme temperature fields. 7 Biblio. Refs.

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USSR

GRIGOLYUK, E. I., TOLKACHEV, V. M., Moscow

"Contact Problem for A Semi-Infinite Cylindrical Shell"

Moscow, Prikladnaya matematika i mekhanika, No. 5, Sep/Oct 71, pp 831-839

Abstract: The problem of the impression of sharp dies in a semi-infinite cylindrical shell that is freely supported at the end over segments in the vicinity of a transverse cross section is discussed. The edges of the dies are assumed to be absolutely rigid and of constant radius and do not have sharp angles. The effect of the end of the shell on the character of the change in the reaction of the dies is investigated. The problem is solved using the equations of the theory of shells constructed on the basis of the Kirchhoff-Love hypothesis. Friction between the surface of the shell and the edges of the dies is not considered. Some numerical results obtained on the BESM-4 computer are also given. Analysis of the equations obtained shows that there is an unlimited rise in the reaction at the end of the zone of contact and this is attributed to hypotheses applied in the theory of shells, such as the hypothesis of straight normals and the hypothesis of the absence of compression of layers of the shell in the direction of the normal. It is pointed out here that the

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USSR

UDC: 533.6.013.42

GRIGOLYUK, E. I., Corresponding Member, Academy of Sciences, USSR, GORSHKOV, A. G.; Production and Scientific Research Institute of Engineering Research in Construction, State Committee for Construction, USSR

"The Action of an Acoustic Pressure Wave Upon an Elastic Conical Shell Fastened in a Screen"

Moscow, Doklady Akademii Nauk SSSR, Vol 202, No 5, 11 Feb 72, pp 1028-1030

Abstract: Difficulties arise during the analysis of transient processes in conical shells immersed in a liquid when they are acted upon by shock waves (the presence of a vortex, variable coefficients in equations of movement of the shell). The article deals with the simplest case of the interaction of a thin elastic truncated conical shell with a plane acoustic stepwise pressure wave, propagating along the axis of the shell (an axisymmetric problem). It is assumed that the shell is fastened in an absolutely rigid immovable screen. Compilation of the equations of motion of the conical shells proceeds from refined nonlinear equations of the theory of thin shells of revolution, such as those used by S. P. Timoshenko. The equations of motion for the case of rigid fastening of the ends at zero initial conditions were integrated by the method of straight lines by means of the method of Kutta

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USSR

GRIGOLYUK, E. I. and GORSHKOV, A. G., Doklady Akademii Nauk SSSR, Vol 202, No 5, 11 Feb 72, pp 1028-1030

Merson (with automatic selection of the step with respect to time). The solution algorithm was programmed in terms of ALGOL-60 and was worked out on the BESM-6 electronic computer. Numerical calculations were conducted for a steel shell immersed in water. A graph is given of curves of shifting U , normal deflection W , the force M_1 , and the moment M_2 in the time moment $\tau = \sin \beta$. Another graph presents curves of velocities W for various time moments. 2 figures, 3 references.

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GRIGOLYUK, E. I., GORSHKOV, A. G.

"Interaction of Weak Shock waves With Elastic Structures"

Nauchn. tr. In-t mekh. Mosk. un-ta (Scientific Transactions, Moscow University Institute of Mechanics) 1970, No. 2, 160 pp, illustrated (from RZh-Mekhanika, No. 2, Feb 71, Abstract No. 2V417)

Translation: In this monograph, the problems of the interaction of plane stationary acoustical pressure waves with fine elastic shells immersed in an ideal (nonviscous and nonconductive to heat) fluid are considered. The work consists of seven chapters and "Appendices." In the first chapter, the basic hypotheses are adduced and the necessary information on the equations of motion of the fluid and the shells is given. The contact problem of the hydroelasticity is solved in two stages. The first stage (Chapters 2, 3, 4) is connected with the determination of the external hydrodynamic forces on the shell. The hydrodynamic problem is solved in its linear statement. The pressure on the shell is put in the form of a sum of the pressure acting on the absolutely rigid shell immovable in space, and the pressure caused by the elastic deformations of the shell and its movement as a rigid body. The second stage (Chapters 5, 6, and 7) is connected with an investigation of the dynamic strength under already known loads. This problem is given in linear and nonlinear statements. The second chapter is devoted to problems of the diffraction of plane shock waves on rigid barriers. The problem is solved with the use of the inte-

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GRIGOLYUK, E.I., et al, Nauchn. tr. In-t mekh. Mosk. un-ta 1970, No 2, 160 pp,
(from RZh-Mekhanika, No 2, Feb 71, Abstract No 2V417)

gral Laplace transform with respect to time. An accurate analytical solution is given for a series of surfaces. The asymptotic estimates of the obtained results are analyzed. An approximate formula is derived for the hydrodynamic pressure acting on an absolutely rigid shell formed by the rotation of the positive Gauss curve. The radiation pressure on cylindrical and spherical shells is analyzed in Chapter 3. The determination of the potential of the radiated waves for specified elastic deformations of the shell and the derivation of approximate formulas for the radiation pressure are achieved by methods similar to those used in diffraction problems (Chapter 2). In the fourth chapter, the pressure on the surfaces of hard bodies moving in a fluid is determined. The motion of a rigid sphere and cylinder in the fluid under the action of a shock wave is investigated.

The succeeding chapters are devoted to problems of the dynamic stability for those shells which are most interesting from the point of view of practical applications. The action of shock waves on closed circular cylindrical shells (Chapter 5), on closed spherical shells and spherical panels (Chapter 6), and 2/3 on cylindrical panels (Chapter 7), is considered. A discussion

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GRIGOLYUK, E.I., et al, Nauchn. tr. In-t mekh. Mosk. un-ta 1970, No 2, 160 pp
(from RZh-Mekhanika, No 2, Feb 71, Abstract No 2V417)

is given of various methods of solving shell oscillation equations. For closed cylindrical shells, solutions are given in linear and nonlinear approximations. The effect of the various factors is estimated. The peculiarity of nonlinear equations of motion for shells is that they take into account the shift of the shell as a solid body in more correct form than can the known solutions. For a closed spherical shell and a slanting spherical panel, solutions are obtained in linear form. In the investigation of the action of shock waves on an elastic cylindrical panel attached to a rigid cylindrical screen and placed in a limitless ideally compressible fluid, use is made of equations of finite buckling from the theory of fine and nonslanting shells. The Bubnov method is used for a slanting rectangle in the plane of a panel. In the case of a nonslanting panel, the method of finite differences is used.

In the "Appendices," a review is given of the literature on problems connected with those considered in the book, and a number of new problems requiring solution are indicated. Bibliography of 236. Yu. G. Balakirev

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USSR

UDC: 539.4:629.7.02

GRIGOLYUK, E. I., KUZNETSOV, V. K.

"Investigation of Heat Exchange in Spacecraft"

V sb. Issled. po teorii plastin i obolochek. Vyp. 6-7 (Studies in the Theory of Plates and Shells--collection of works. No 6-7), Kazan', Kazan' University, 1970, pp 76-89 (from RZh-Mekhanika, No 4, Apr 71, Abstract No 4V719)

Translation: A survey is given of the results of theoretical studies of heat exchange in the hulls of spacecraft. The survey covers the period from 1956 to 1966. Consideration is given to cylindrical and spherical shells of space vehicles under conditions of nonstationary radiation heating and the quasi-steady state where balance exists between the overall heat absorbed by the spacecraft, and the heat radiated by the surface of the hull into space. Basic equations and computational formulas are presented. The results are discussed. Bibliography of 23 titles. L. A. Shapovalov.

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USSR

GORSHKOV, A. G., ~~GRIGOLYUK, E. I.~~, Moscow

"Impact of a Spherical Shell Against the Surface of a Liquid"

Moscow, IAN SSSR, Mekhanika Zhidkosti i Gaza, No 6, Nov/Dec 70,
pp 90-93

Abstract: The authors study the problem of vertical impact of a mildly sloping spherical shell against the surface of an ideal incompressible liquid. The shell is supported at the edge by an elastic former which is fastened to a rigid body of mass M_0 which is much greater than the mass m_0 of the shell. It is assumed that the initial impact velocity v_0 is small in comparison with the speed of sound c in the liquid. The analysis is restricted to axisymmetric deformations of the shell.

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USSR

UDC: 539.3

GRIGOLYUK, I. I. and LIPOVTSEV, Yu. V.

"Solution of One Type of Problem in Thin Shells of Revolution"

V sb. Probl. mekhan. tverd. deformir. tela (Problems in the Mechanics of Solid Deformed Bodies) Leningrad, "Sudostroyeniye" (Shipbuilding) 1970, pp 129-141 (from RZh-Mekhanika, No. 8, Aug 70, Abstract No. SV147)

Translation: This paper describes a variant in the use of the method of finite differences using the die matrix algorithm for determining the natural numbers and functions of the static and dynamic equations in the linear theory of elastic slanting shells. The initial state of the shell is considered instantaneous and the nature of the bulge local. A method of solution and its practical realization are given. Sufficient conditions are then established for the correction of a system of difference equations which are the analogs of boundary value problems in the theory of

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USSR

GRIGOLYUK, E. I. and LIPOVTSEV, Yu. V., V sb. Probl. mekhan. tverdi. deformir. tela, 1970, pp 129-141

shells. The following problems are solved: 1) the static stability of a truncated ellipsoid of revolution with axial extension; 2) the stability of a cylindrical shell under axial pressure in combination with radial forces applied along the circumference in the middle section; 3) the dynamic stability of an annular cylindrical shell in an ultrasonic gas flow. Bibliography of 21.

A. V. Sachenkov

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USSR

UDC: 629.78:533.6.011.6

GRIGOLYUK, E. I., KUZNETSOV, V. K.

"Investigation of Heat Exchange of Space Vehicles"

V sb. Issled. po teorii plastin i obolochek (Research in the Theory of Plates and Shells), vyp. 6-7, Kazan', Kazan' University, 1970, pp 76-89 (from RZh-Raketostroyeniye, No 1, Jan 71, Abstract No 1.41.99)

Translation: Design of artificial satellites and spacecraft involves determination of the surface temperature distribution for bodies of various geometric shapes subjected to solar radiation. In this paper the authors discuss the results of theoretical studies of heat exchange of cylindrical and spherical hulls of space vehicles under quasisteady-state conditions and in the case of nonstationary radiation heating. Bibliography of 23 titles. T. A. Ye.

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USSR

BURAK, YA. I., GRIGOLYUK, E. I., and PODSTRIGACH, YA. S.

"Use of Methods of the Calculus of Variations to Solve Problems in the Optimal Heating of Thin Shells"

Tr. VII Vses. konferentsii po teorii obolochek i plastinok (Proceedings of Seventh All-Union Conference on Shell and Plate Theory), 1969, Moscow, "Nauka", 1970, pp 101-109 (from RZh-Mekhanika, No 1, Jan 71, Abstract No LV150 by V. N. Kuznetsov)

Translation: The authors determine the temperature field, the presence of which in a thin-walled elastic shell results in the appearance of the stressed state which is "optimal" in the sense that the elastic energy of the shell is minimal. Nontriviality of the solution is due to the additional conditions of the following two kinds: 1) translational components, average temperature T and temperature factor T_2 satisfy certain differential equations in given subregions of the region S_0 occupied by the median surface; 2) on certain contours belonging to S_0 , translational components and temperature characteristics T_1 and T_2 , as well as their derivatives are connected by given 1/

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BURAK, YA. I., et al., Tr. VII Vses konferentsii po teorii obolochek i plastinok, 1969, Moscow, "Nauka", 1970, pp 10,-109

correlations. These conditions are considered consistent with shell theory and conditions (1).

The problem here formulated is solved as follows: Elastic shell energy is regarded as a functional given on a set of solutions to a system of resolvents of the thermoelasticity boundary-value problem for a given shell; the existence of a set of solutions is in keeping with the fact that the temperature field is regarded, subject to natural constraint, as arbitrary, but as satisfying additional conditions (1) and (2). With the help of generalized functions the formulated problem is reduced to a search for the absolute extremum of the functional, an explicit expression of which is presented. The Euler equations corresponding to this functional contain as coefficients generalized functions of the type of the Heaviside θ function, the Dirac δ function and derivative δ' . It is asserted that the obtained equations, together with the resolvents of the formulated boundary value problem for the shell and with additional conditions (1) and (2), form a complete system of equations for determining the extremal temperature field and corresponding states of stress and strain.

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USSR

BURAK, YA. I., et al., Tr. VII Vses. konferentsii po teorii obolochek i plastinok, 1969, Moscow, "Nauka," 1970, pp 101-109

A solution is given to the problem of axisymmetric local heating of an infinite cylindrical shell in two cases: a) where the temperature, constant in thickness ($T_2 = 0$), assumes prescribed values in five normal cross sections of the shell -- it equals zero in the end cross sections of the shell and has a relative minimum in the middle section; b) where average temperature T_1 is given and function T_2 is unknown (without additional limitations of type (1)). Average temperature distribution is selected from the solution of the preceding problem. Stress diagrams, calculated for a shell with $\gamma = 0.3$ and $R/h = 40$, are presented, in which various heating methods are compared. A two dimensional problem for a cylindrical shell is considered. The authors obtain a general solution and indicate a simple expression for the extremal temperature field, which is continuous together with the first derivative.

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USSR

UDC 539.3

GRIGOLYUK, E. I., KABANOV, V. V.

"Stability of Circular Cylindrical Shells"

V sb. Mekhan. tverd. deform. tel, 1967 (Itogi nauki VINITI AN SSSR) (Mechanics of Solid Deformed Bodies, 1967 (Scientific Results at the All-Union Institute of Scientific and Technical Information of the USSR Academy of Sciences)--collection of works), Moscow, 1969, 348 pp (from RZh-Mekhanika, No 3, March 1970, Abstract No 3V140)

Translation: This review paper discusses various aspects of buckling of cylindrical shells within the limits of applicability of Hook's linear law. Based on general hypotheses of the theory of thin shells, assuming a normal element, a finding is reached for linear equations for general-type shells, and from these stability equations are derived. Various forms of these equations for cylindrical shells are compared with each other. Stability criteria and methods of solving linear and nonlinear problems are analyzed.

Isotropic, orthotropic, and anisotropic shells are examined for a variety of boundary conditions and external force and temperature stresses (longitudinal and transverse pressure, torsion, bending, and their manifold combinations). Results of solving linear and nonlinear problems are analyzed and compared. Experimental data are described. The effect of initial imperfections and the moment status on

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USSR

GRIGOLYUK, E. I., KABANOV, V. V., Mekhan. tverd. deform. tel, 1967 (Itogi nauki
VINITI AN SSSR), 1969, 348 pp (from RZh-Mekhanika, No 3, March 1970, Abstract
No 3V140)

critical load values is evaluated. Empirical functions are given. The bibliog-
raphy contains about 1700 references. It covers all studies known to the authors
up through 1966. The wealth of material assembled by the authors and also the
results of their own research and those of their students make the book a valuable
text for persons studying problems of design and calculation, and for specialists
and graduate students.

A. V. Sachenkov

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 Stress, Deformation, and Vibration

USSR

GRIGOLYUK, E. I., Corresponding Member of the Academy of Sciences USSR and
FIL'SHTINSKIY, L. A., Institute of Mechanics of Moscow State University
imeni M. V. Lomonosov

"Equivalent Rigidity of a Biperiodic Lattice Reinforced With Elastic Rings"

Moscow, Doklady Akademii Nauk SSSR, Vol. 187, No. 6, 21 Aug 69, pp 1254-1256

Abstract: The problem of reducing a uniformly perforated plate to a continuous plate equivalent to it in the sense of rigidity to stretching or bending is considered for the case of isotropic stretching of an unbounded plate with a biperiodic system of identical circular holes reinforced with elastic thin rings of a material different from the lattice material. In solving the problem, the authors start from the corresponding biperiodic problem in the exact formulation, but the ring is assumed to be operational only in stretching. The solution is given in the form of an infinite system of linear algebraic equations. The results are valid if the lattice does not differ greatly from a true lattice and the load at infinity is close to isotropic.

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USSR

UDC 539.4

GRIGOLYUK, E. I., Corresponding Member of the Academy of Sciences USSR and
FIL'SHTINSKIY, L. A.

"A Complete System of Solutions in the Theory of Flat Shells"

Moscow, Doklady Akademii Nauk SSSR, Vol 190, No 3, 21 Jan 70, pp 549-551

Abstract: A system of regular solutions that is complete relative to any finite singly-connected region on the surface of a shell is constructed on the basis of integral representations of the solutions of the equations of the theory of flat shells. It is noted that it is difficult to solve boundary value problems in the theory of shells due in large measure to the absence of complete systems of solutions of the corresponding equations. The exceptions are circular cylindrical and spherical shells and very flat shells with rectangular outline, for which particular solutions are known. A general solution to the system of differential equations in the theory of flat shells is presented and it is shown that the stress function and deflections in the shell, and hence all forces and displacements, can be expressed in terms of this complex function. The equations are applied to an example of the case of a circular cylindrical shell.

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USSR

UDC 539.3

GRIGOLYUK, E. I., BURAK,,YA. I. PODSTRIGACH, YA. S.

"Problem of Extremal Axisymmetric Heating of a Cylindrical Shell"

V sb. Teplovyve napryazh. v elementakh konstruktsey (Thermal Stresses in Structural Members--collection of works), Vyp. 8, Kiev, "Nauk. dumka", 1969, pp 52-60 (from RZh-Mekhanika, No 3, March 1970, Abstract No 3V94)

Translation: A study is made of one of the possible variants of the formulation and solution of the problem of finding temperature fields that ensure within the limits of given restrictions the stressed state that is best in a certain sense for the case of axisymmetric heating of an infinite cylindrical shell. The condition of minimum energy of shell distortion is adopted as the criterion of optimality. Solution of the corresponding variational problem is obtained for the case when deflection functions and their derivatives are given for specific shell sections. Resume

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1/2 015 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--GENERAL SOLUTIONS OF THE EQUATIONS OF THE DISPLACEMENT THEORY OF
SHALLOW SHELLS -U-
AUTHOR-(02)-GRIGOLYUK, E.I., FILSHTINSKIY, L.A.
COUNTRY OF INFO--USSR
SOURCE--AKADEMIYA NAUK SSSR, IZVESTIYA, MEKHANIKA TVERDOGO TELA, MAR.-APR.
1970, P. 75-82.
DATE PUBLISHED-----70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--SHELL THEORY, SHELL STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/0345

STEP NO--UR/0484/70/000/000/0075/0082

CIRC ACCESSION NO--AP0124102

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0124102

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DERIVATION OF GENERAL SOLUTIONS OF THE EQUATIONS OF THE ENGINEERING THEORY OF SHALLOW SHELLS UNDERGOING DISPLACEMENTS, CONTINUING THE WORK BEGUN BY VEKUA (1948). IT IS SHOWN THAT ANY REAL SOLUTION OF SUCH AN EQUATION CAN BE REPRESENTED IN TERMS OF FOUR ARBITRARY ANALYTICAL FUNCTIONS. THE PROBLEM OF CONSTRUCTING THE RIEMANN FUNCTION OF THE PRODUCT OF TWO DIFFERENTIAL OPERATORS WHEN THE GENERAL SOLUTION IS REPRESENTED IN THE FORM PROPOSED BY VEKUA (1948) IS GIVEN SPECIAL ATTENTION.

UNCLASSIFIED

USSR

GRICOLYUK, E. I., SHALYARCHUK, P. N. (Moscow)

"Equation of Perturbed Motion of a Body With a Thin-Walled, Elastic Shell Partially Filled With Fluid"

Moscow, Prikladnaya Matematika i Mekhanika, May-June 1970, pp R01-R11

Abstract: The authors derive linear equations for the perturbed motion of a thin-walled elastic shell partially filled with a heavy compressible fluid, considered in an acoustical approximation. The principal vector and principal moment of reaction acting from the side of the shell on the "supporting body" are determined. Perturbed motion with small oscillations is characterized by the shift of some point on the surface of the rigid attachment of the shell, by a turning relative to this point, and by elastic displacements which are broken down into the natural forms of the oscillations of the attachment of the shell, which is partially filled with a fluid. A variational principle is used to determine the natural frequencies and forms of the oscillations of a shell with a compressible fluid.

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USSR

GRIGOLYUK, E. I., et al. Prikladnaya Matematika i Mekhanika, May-June 1970, pp 401-411

The calculation of the compressibility of the fluid makes it possible to consider the oscillations in the acoustical spectrum of frequencies and -- in addition, as the calculations indicate -- can be shown to be necessary in the calculation of the lower frequencies of the elastic oscillations of a shell: for example, the axisymmetrical oscillations of comparatively thick shells of revolution. Calculation of the gravitation is necessary in the study of oscillations in the spectrum of frequencies of gravitational surface waves as well as the oscillations of soft shells with fluid.

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1/2 015

UNCLASSIFIED

PROCESSING DATE--16OCT70

TITLE--A COMPLETE SYSTEM OF SOLUTIONS IN SHALLOW SHELL THEORY -U-

AUTHOR--(02)-GRIGOLYUK, E.I., FILSHTINSKIY, L.A.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIYA NAUK SSSR, DOKLADY, VOL. 190, JAN. 21, 1970, P. 549-551

DATE PUBLISHED--21JAN70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--SHELL THEORY, SHELL STRUCTURE, CYLINDRIC SHELL STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1995/1102

STEP NO--UR/0020/70/190/000/0549/0551

CIRC ACCESSION NO--AT0116568

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AT0116568

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DERIVATION OF A SYSTEM OF REGULAR SOLUTIONS WHICH IS COMPLETE WITH RESPECT TO ANY FINITE SIMPLY CONNECTED REGION ON THE SURFACE OF A SHELL. THE SYSTEM OF SOLUTIONS IS OBTAINED ON THE BASIS OF THE METHOD OF INTEGRAL REPRESENTATIONS. AS AN EXAMPLE, THE RESULTS ARE APPLIED TO A CIRCULAR CYLINDRICAL SHELL.

UNCLASSIFIED

GRIGORASH, F.F.

Social Hygiene & Health

Latvia

Publication of the USSR AND NATIONAL POLICY IN PUBLIC HEALTH
Article by F.F. Grigorash, Chair of Social Hygiene and Public Health
Organization (founded by Professor F.F. Grigorash), Riga University
Faculty of Medicine, Soviet Union, Latvian SSR, Riga, 1972
Submitted 3 July 1972, pp 13-33

Vladimir Il'ich Lenin considered problems dealing with public health care in the light of the revolutionary and anti-imperialist struggle of the working class. He saw revolutionary and anti-imperialist struggle as the road toward improving the health of society and eliminating disease. The 50 years of existence of the USSR demonstrate most vividly how Lenin's Party, at all stages of development of our country, consistently adhered to the basic principles of socialist and revolutionary public health. It is easy to become convinced of this if we take as an example of the national republics. In particular Latvia, which returned back to May 1917, V.I. Lenin, in a pamphlet entitled "National Republics with a deviation of the Party Program," defined the chief task of the working class party pertaining to safeguarding the health of the proletariat: they served as the foundation for the first democratic republic by the councils of workers' and soldiers' deputies of Latvia.

At the start of the 19th century, the most widespread diseases in Latvia were typhoid, cholera, and tuberculosis. All forms of oppression, including imperialist, landlord, and national, as well as arbitrary police rule, were imposed by all its people, including the Latvians.

The developing revolutionary class contradictions and the rise of the bourgeois-democratic revolution. The bourgeois revolution in Latvia had tried to take advantage of the revolutionary situation to reach its own imperialist goals. The national policy was directed toward suppressing non-Russian nationalities in Latvia (Latvians, Lithuanians, Poles, etc.) the governing system of Russian rule was totally retained.

The February Bourgeois-Democratic Revolution did not bring about changes in organizing medical and sanitary care for the population of Latvia.

JPRS 58117
31 Jan 73

UDC 539.214;539.374

USSR

GRIGORASH, V. F., KOSENKO, Z. I.

"Physically Nonlinear Problem for a Circular Plate Weakened by a Square Opening"

V sb. Kratk. tezisy dokl. k konf. po povrezhdeniyam i ekspluat. nadezhnosti sudovykh konstruktsiy, 1972 (Brief Topics of Papers at the Conference on Failure and Operational Reliability of Ship Designs, 1972 -- Collection of Works), Vladivostok, 1972, pp 52-59 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V436)

Translation: An isotropic circular plate of a physically nonlinear material with a central square opening (with rounded corners) to which a uniform pressure P is applied to the contour is considered. The null (linear) and first approximations of the solution of the problem are constructed on the basis of a version of the G. Kauder theory by the small parameter method in combination with the A. S. Kosmodamianskiy method for the doubly connected region considered. Calculations of linear stresses and corrections to them for three values of P taking into account the effect of the physical nonlinearity of the material in the stress state of the plate in the first approximation

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USSR

GRIGORASH, V. F., KOSENKO, Z. I., *Kratk. tezisv dokl. k konf. po povrezhdeniyam i ekspluat. nadezhnosti snagovykh konstruktsiy*, 1972, Vladivostok, 1972, pp 52-59

are given for a particular case of the geometric parameters. Also constructed for one value of P are diagrams of the annular stresses on the internal contour of the plate. It was concluded from analysis of the results that in this case consideration of the physical nonlinearity of the material increases the concentration of stresses around angular points. The nonlinear corrections change sign with an increase in the distance between contours.
8 ref. N. P. Fleyshman.

2/2

- 63 -

UDC: 533.9.082.5

USSR

FUGOL', I. Ya., NYSHKIS, D. A., and ~~GRIGORASHCHENKO, O. N.~~

"Absorption Methods of Measuring Absolute Concentration of Metastable Helium Atoms in a Plasma"

Leningrad, Optika i Spektroskopiya, vol. 31, No. 4, 1971, pp 529-535

Abstract: An important factor in the determination of the kinetics of metastable helium atoms is the measurement of the integral absorption of the radiation from an external source passing through the plasma. This paper computes the full absorption and reabsorption of the 388.9 nm line and the singlet 501.6 nm line for the 4-300° K and the 1-70 mm Hg temperature and pressure intervals respectively. The asymptotes in the limiting cases of small and large optical densities are analyzed. The results of these computations permit obtaining the absolute concentration of the helium metastable atoms in the 2³S and 2¹S states. The authors note that details of the computations are given in their preliminary papers published in the Trudy FTINT, No. 1, 1968, p 204 and No. 5, 1969, p 50. Curves are plotted for the integral absorption as a function of the optical thickness for He 388.9 nm and for the absorption as a function of the optical thickness for the He 501.6 nm line. The authors thank L. A. Temkin for

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FUCOL', I. Ya. et al, Optika i spektroskopiya, vol. 31, No. 4,
1971, pp 529-535

setting up the program and making the computations on the elec-
tronic computer.

2/2

- 125 -

AA0040732

... UR 0482

G
Soviet Inventions Illustrated, Section I Chemical, Derwent, 3-70

235961 GRANULAR RESIN SEPARATION from emulsion
is ensured by mixing the cooling agent
with the hot emulsion directing the former at an
angle to the flow. The feed should maintain a temp
of 20-40°C at the end of the mixing process.
16.12.66. as 1119962/23-5, GEL'PERIN, N.I. et al.
(13.6.69) Bul. 6/24.1.69. Class 39a¹, 39b, Int. Cl
B 29b, C 08g.

LD
AUTHORS: Gel'perin, N. I.; Tumanskiy, A. S.; Agranenko, S. A.;
and Grigorchuk, G. N. 7

19750389

Construction

USSR

UDC: 691.88

PONOMARENKO, E. P., Candidate of Technical Sciences,
TYKVA, P. N., DOMIO, A. A., GRIGORCHUK, G. P.,
DENISENKO, V. O., Engineers

"On Chrome Plating of Embedded Parts in Reinforced Concrete Structures"

Moscow, Beton i Zhelezobeton, No. 4, April, 1971, pp 26-28

Abstract: One of the effective means to prevent corrosion is chrome plating, especially the one deposited by the vacuum diffusion method. This method consists of keeping the parts for four hours in a vacuum furnace at 1300°C.

The steel treated by this method loses some of its strength unless it is subsequently normalized.

USSR

PONOMARENKO, E. P., et al, Beton i Zhelozobeton, No 4, April 1971, pp 26-28

Welding of the chrome plated parts with stainless electrodes does not destroy the chrome plating.

Tests with nitric acid showed that the corrosion resistance of chrome plated specimens equals that of chrome-nickel steel.

Use on chrome plated parts for the preiabricated building panels results in considerable savings over the galvanizing method.

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1/2 011
TITLE--CADMIUM NIOBATES -U-

UNCLASSIFIED

PROCESSING DATE--18SEP70

AUTHOR--(03)-GOLUB, A.M., NGUYEN, C.Y., GRIGORENKO, F.F.

COUNTRY OF INFO--USSR

SOURCE--ZH. NEORG. KHIM. 1970, 15(1), 23-5

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--TERNARY FLUID SYSTEM, AQUEOUS SOLUTION, NIOBATE, SOLUBILITY,
CADMIUM COMPOUND, ELECTRIC CONDUCTIVITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1987/0778

STEP NO--UR/0078/70/015/001/0023/0025

CIRC ACCESSION NO--AP0104224

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--18SEP70

2/2 011

CIRC ACCESSION NO--AP0104224

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. USING SOLY METHOD, CD(NBO SUB3)
SUB2. 1.5H SUB2 0 AND CD SUB3 (NBO SUB4) SUB2. 5H SUB20 WERE PREPD. IN
KNBO SUB3 MINUS CD(NO SUB3) SUB2 MINUS H SUB2 0 AND K SUB3 NBO SUB4
MINUS CD(NO SUB3) SUB2 MINUS H SUB2 0 SYSTEMS. AT 25DEGREES, SATD.
KNBO SUB 3 SOLN. HAD AN ELEC. COND. OF 1.65 TIMES 10 PRIME NEGATIVE4 OHM
PRIME NEGATIVE1 CM PRIME NEGATIVE1. THE SOLY. PRODUCT OF CD(NBO SUB3)
SUB2 IS 4.5 TIMES 10 PRIME NEGATIVE18.

UNCLASSIFIED

USSR

UDC 621.382.9

OBUKHOVSKIY, Ya. A., FAYNER, M. Sh., SYSOYEV, L. A., and GRIGORENKO, G. D.

"Effect of the Parameters of the Source Material of Cadmium Sulphide on the Efficiency of Operation of Piezotransducers Using a Diffused Layer"

V sb. Monokristally i tekhnika (Monocrystals and Technics -- Collection of Works), Issue 3, Khar'kov, 1970, pp 207-210 (from RZh-Elektronika i yeye primeneniye, No 7, July 1971, Abstract No 7B454)

Translation: The dependence is found of the efficiency of operation of piezotransducers using a diffused layer in CdS, operating in the 30-300 MHz frequency range, on the concentration of impurities in source material of various brands and the concentration of the donor impurities Al, In, Ga, introducable in the process of growth. It is shown that annealing of the source material of CdS and the introduction of Al in a concentration $\sim 5 \times 10^{-2}$ percent by weight during growth increases the efficiency of operation of the piezoconverter by 20-30 db. Summary.

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USSR

UDC 669.15'24:669.014.623

POMARIN, YU. M., GRIGORENKO, G. M., LAKOMSKIY, V. I., TORIKHOV, G. F., and
SHEREVERA, A. V., Kiev

"On the Solubility of Nitrogen in Iron-Nickel Melts"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 4, Jul/Aug 72, pp 32-36

Abstract: The solubility of nitrogen in iron, nickel, and iron-nickel alloys with 21.5% Ni and 59.0% Ni was experimentally investigated by the method of smelting the metal in an electromagnetic field in a gas flow (Ar, N, He) with subsequent hardening. The N solubility in Fe was investigated in the 1870-2860°K temperature interval, and in Fe-Ni alloys in the interval from the melting point to 2500°K. The temperature dependences of N solubility in Fe, Ni, and Fe-Ni alloys and the effect of Ni concentration in Fe-Ni alloys on the N heat of solution are shown. The temperature dependences of the N interaction parameter for Fe-Ni alloys are compared with data of other authors. The N solubility in Fe-Ni alloys was found to comply with the square root principle. An analytical expression was derived for the dependence of N solubility on the temperature and the Ni concentration in the Fe alloy. Five illustrations, one table, three formulas, twelve bibliographic references.

1/1

USSR

GRIQOZ, V. M., Institute of Electric Welding, Acad. Sci. USSR

"Pore Formation in Weld Seams"

Kiev, Avtomaticheskaya Svarka, No 10, Nov 78, pp 13-17

Abstract: This is a theoretical article on pores in welded seams, which are formed as the result of two simultaneous processes: the formation of gas bubbles in the liquid metal and the metal's crystallization. The bubbles disappear as a result of the emergence of dissolved gases (hydrogen and nitrogen) and as carbon is being formed in the metal and water vapor. Assuming that the bubbles and nitrogen are the causes of most pores, the author develops a mathematical condition for the existence of gas bubbles, and derives a set of differential equations describing the variation in gas content. In some cases, the equations have some particular analytic solutions which are widely used in engineering. On the basis of the redistribution of the admixture in zone melting, on the basis of which the gas bubbles can form only with a quantity of admixture greater than the standard solubility at the melting point of the metal, the author considers two cases: one, in which the gas concentration in the liquid metal phase is less than the standard solubility; and two, in which the gas concentration in the liquid metal phase is greater than the standard solubility. In the first case, the gas concentration in the liquid metal phase is less than the standard solubility; in the second case, it is greater than the standard solubility.

USSR

GRIGORIN, G. M., *International Journal of Radiation Physics*, 1977, 1, 1-11.

gas concentration is equal to or exceeds the standard deviation. The standard of this standard is one of the results of solving the partial differential equations noted above.

1/2 030 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--ELECTRICAL ABSORPTION OF GASES IN ARC WELDING -U-
AUTHOR--(02)-GRIGORENKO, G.M., LAKOMSKY, V.I.
COUNTRY OF INFO--USSR
SOURCE--AVTOMAT. SVARKA. FEB. 1970, (2), 7-9
DATE PUBLISHED---FEB70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--ARC WELDING, BIBLIOGRAPHY, GAS ABSORPTION, CHEMICAL
ABSORPTION, ARGON, HELIUM, METAL CONTAINING GAS, GAS CONTAINING METAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/0315

STEP NO--UR/0125/70/000/002/0007/0009

CIRC ACCESSION NO--AP0124074

UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0124074

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DIFFERENCES BETWEEN THE ELECTRICAL AND CHEMICAL MECHANISMS OF THE ABSORPTION OF GASES BY METALS DURING ARC WELDING ARE DISCUSSED. A METHOD FOR EXPERIMENTALLY DISTINGUISHING BETWEEN THE TWO FORMS OF ABSORPTION IS DESCRIBED. TESTS APPLIED TO ARC WELDING IN AR-HE MIXTURES CONFIRM THAT IN ALL CASES THE CATHODE METAL CONTAINS AR WHILE THE ANODE IS FREE FROM ABSORBED GAS. A CONSIDERABLE AMOUNT OF GAS IS ABSORBED BY THE WELDED PARTS AS A RESULT OF THE ELECTRICAL MECHANISM.

UNCLASSIFIED

USSR

UDC 621.396.69:621.316.6

GULYASHCHEV, Y. N.

"A Device to Test Resistors for Reliability"

USSR Author's Certificate No 253187, Filed 18 Jul 67, Published in RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10V313 P)

Translation: The proposed device for reliability testing of resistors is made in the form of a rack which consists of individual working chambers divided into several sections. The unit is equipped with a power supply, heating system and temperature stabilizing module. As a distinguishing feature of the patent, the device is designed for keeping temperature conditions more constant during the testing process, and for simplified construction. The resistors to be tested are placed in cartridges in an isothermal plane and placed in the sections of the above-mentioned working chambers.

1/1

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USSR

UDC 531.76:615.371.004.68:612.014

STEPANYAN, E. D., PETROSYAN, R. A., and GRIGORENKO, L. P., Institute of Zoology, Armenian Academy of Sciences

"The Time Factor in Postvaccinal Shifts in Mitosis of Bone Marrow Cells"

Yerevan, Biologicheskii Zhurnal Armenii, No 8, 1971, pp 82-88

Abstract: In Wistar rats inoculated once intravenously with brucellosis or paratyphoid cultures, bone marrow cell mitosis increased sharply within 24 hours and did not return to normal until 12 to 16 days later. Revaccination at this time with the same antigen failed to stimulate mitosis. However, the injection of paratyphoid antigen 12 to 16 days after vaccination with brucellosis antigen intensified cell division markedly. The lack of a reaction to repeated injection of the same bacterial agent in the early period after vaccination is ascribed mainly to nonspecific immunological processes and in the later period to specific processes.

1/1

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USSR

6 UDC: 620:18;539.26

PLUTALOVA, L. A., SKRIPCHENKO, G. B., and GRIGORENKO, L. P., Scientific Research Institute of Mechanical Engineering, Moscow

"Effect of Pressure on the Structure of Graphite Materials in the Process of Intensive Wear"

Kiev, Fiziko-Khimicheskaya Mekhanika Materialov, Vol 6, No 1, Jan-Feb 70, pp 49-54

Abstract: A study was made of structural changes occurring in graphite materials during intensive wear. The basic parameters determining the value of "critical" pressure are the structure and strength of the graphite material, the material of the counterpart, and the composition of the gas medium. It has been shown that the wear products undergo extensive destruction down to the complete amorphous phase. The greatest structural distortions were observed at pressures close to critical when the normal process of work changes to intensive wear. With respect to the ratio of intensity maxima, it is suggested that in the products of wear there are 10% of the crystalline phase, about 40% of finely-disperse crystallites consisting of 2-3 layers, and the remaining 50%--completely amorphous carbon. As the specific pressure of friction increases, distortions in wear products decrease. It is noted that the nature of destruction depends on the surface state of the graphite specimen.

1/1

USSR

UDC 621.385.632

BURNEYKA, K.P., GRIGORENKO, L.P., KANAVETS, V.I.

"Investigation Of TWT Frequency Converter With Pre-Modulation By Electron Beam"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronics Technology. Scientific-Technical Collection. Microwave Electronics), 1970, No 5, pp 73-81 (from RZh--Elektronika i yeye primeneniye, No 8, August 1970, Abstract No 9A147)

Translation: A two-sectioned combination frequency converter is investigated, which incorporates a klystron electron buncher and an inherent TWT frequency converter. During the theoretical consideration, a discrete model of the electron flow was used and waves of four frequencies were taken into account. The results of the calculation were found to be in accordance with the results of an investigation of an experimental model. Summary.

1/2 026 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--3,4,BENZOPYRENE LEVEL IN SUNFLOWER AND COTTONSEED OILS --U--
AUTHOR--(05)-GRIGORENKO, L.T., DIKUN, P.P., KALININA, I.A., MIRONOVA, A.,
RZHEKHIN, V.P.
COUNTRY OF INFO--USSR
SOURCE--PRIKL. BIOKHIM. MIKROBIOL. 1970, 6(2), 142-50
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BENZENE DERIVATIVE, AROMATIC POLYCYCLIC HYDROCARBON,
CARCINOGEN, VEGETABLE OIL, SMOKE, FOOD TECHNOLOGY, FOOD ANALYSIS, THIN
LAYER CHROMATOGRAPHY, FLUORESCENCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3007/0109

STEP NO--UR/0411/70/006/002/0142/0150

CIRC ACCESSION NO--AP0135606

UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0135606

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. POLYCYCLIC HYDROCARBONS WERE DETD. BY MODIFICATION OF A METHOD USED IN THE ANAL. OF SMOKED AND OTHER KINDS OF FOODS, CONSISTING OF SAPON. OF 50 G OIL WITH 25 G KOH AND 100 ML 96PERCENT ETOH 1-2 HR OVER BOILING, SEPN. OF THE NONSAPOND. FRACTION BY THIN LAYER CHROMATOG. ON AL SUB2 O SUB3 IN AN ASCENDING CURRENT OF ET SUB2 O, FOLLOWED BY QUANT. AND QUAL. FLUORESCENCE ANAL. THE 3,4-BENZOPYRENE CONTENT IN SUNFLOWER OIL OF VARIOUS ORIGINS VARIED WIDELY, BUT WAS MOSTLY 1-5 MU G-KG OIL. IT WAS ALSO FOUND IN COTTONSEED OILS. FACILITY: ALL UNION RES. INST. FATS, USSR.

UNCLASSIFIED

Information Theory

USSR

UDC: 681.322

ALESHCHENKOV, V. B., GRIGORENKO, ~~M. P.~~, GULYAYEV, V. A., MATALIN, L. A., TISHECHKIN, A. S.

"Data Gathering System"

Moscow, Priory i tekhnika eksperimenta, No 1, Jan-Feb 71, pp 89-93

Abstract: The data gathering system is defined as the control of the parameters of a system under test through the accumulation of data with a minimal expenditure of human labor and in a form convenient for input to an electronic computer. The system considered in this paper is based on a switching analog-digital converter. Signals from various sensors feed into the switching device, which is directed by a control apparatus to select a single signal for input to the converter, and thence to a linearizer, a frequency meter, and a readout device in succession. The exchange of signal information among these blocks is indicated in an accompanying block diagram and is explained in the text together with an account of what happens inside each of the blocks.

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USSR

ALESHCHENKOV, V. B., et al, Pribory i tekhnika eksperimenta, No 1, Jan-Feb 71, pp 89-93

These blocks are also physically separate and are housed in two sections, one of which is equipped with a perforator and a digital printer. The system's technical specifications are listed in a short paragraph.

2/2

1/2 021 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--NEW NATURAL INTERMETALLIC TIN, ANTIMONY AND COPPER COMPOUNDS -U-

AUTHOR--NIKOLAYEVA, E.P., GRIGORENKO, V.A., GAGARKINA, S.D., TSYPKINA,
P.YE.

COUNTRY OF INFO--USSR

SOURCE--ZAP. VSES. MINERAL. OBSHCHEST. 1970, 99(1) 68-70

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--GEOGRAPHIC LOCATION, CRYSTAL STRUCTURE, X RAY ANALYSIS,
ZIRCON, PUTILE, MINERAL DEPOSIT, TIN COMPOUND, ANTIMONY COMPOUND, COPPER
COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1088/1093

STEP NO--UR/0000/70/099/001/0069/0070

CIRC ACCESSION NO--AP0105953

UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0105953

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. UNUSUAL MINERALS WERE FOUND DURING STUDY OF HEAVY CONCS. IN TRIBUTARIES OF THE ELKIAIDAI BROOK (EASTERN END OF THE NORTHERN NURA TAU RIDGE, UZBEKISTAN) IN THE AREA OF SILURIAN ARENACEOUS ARGILLACEOUS FORMATIONS. THEY WERE LIGHT GRAY IRREGULAR NODULAR, AND LAMINAL AGGREGATES WITH INCLUSIONS OF COUNTRY ROCKS. ZIRCON, LEUCOXENE, RUTILE, APATITE, ANATASE, ANDALUSITE, BARITE, CELESTITE, SCHEELITE, AND CINNABAR WERE FOUND TOGETHER WITH THESE NEW MINERALS WHICH MADE 5PERCENT OF THE FRACTION. THE MICROSCOPIC STUDY SHOWED THAT THE AGGREGATES ARE METALLIC SN IN CLOSE ASSOCN. WITH WELL FORMED SMALL CUBIC CRYSTALS OF SOME OTHER MINERAL. THE MACRO AND MICROSCOPIC STUDY, DISPERSION OF REFLECTANCE IN THE VISIBLE REGION, MICROHARDNESS, X RAY STRUCTURAL DATA, AND DATA ON THE COMPN., OBTAINED BY X RAY MICROANALYZER, SHOWED THAT THIS INTERMETALLIC COMPD. IS A NEW MINERAL CALLED STISTAITE. THE STISTAITE WAS IN THE FORM OF SMALL (0.02-0.15 MM) CUBIC CRYSTALS WITH METALLIC LUSTER. IT POSSESSED HIGH REFLECTANCE (81.3PERCENT AT LAMBDA EQUALS 580 MMU) WAS CREAM WHITE, AV. MICROHARDNESS 115 KG-MM PRIME2, AND PARAMETER A EQUALS 4.15 PLUS OR MINUS 0.1 ANGSTROM OF ITS BCC. LATTICE. THE MINERAL CONTAINED 49.4PERCENT SN AND 5.06PERCENT SB. THE STISTAITE CRYSTALS HAD NUMEROUS FINE BLuish VIOLET INCLUSIONS WITH LOWER REFLECTANCE AND HIGHER HARDNESS THAN STISTAITE. THE CUBIC CRYSTALS OF STISTAITE WERE NATURAL INTERMETALLIC COMPS. WITH SNSB FORMULA.

USSR

UDC: 51.681.391

GRIGORENKO, V. P., NEYMARK, Yu. I., RAPOPORT, A. N., ROMIN, Ye. I.

"Collective Optimization of Independent Automatic Machines With Adaptation"

V sb. Zadachi statist. optimizatsii (Problems of Statistical Optimization --collection of works), Riga, "Zinatne", 1971, pp 31-43 (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V668)

[No abstract]

1/1

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USSR

UDC 539.3

GRIGORENKO, YA. M., and VASILENKO, A. T., (Kiev), Institute of Mechanics,
Ukrainian SSR

"Concerning the Solution of Problems of Axisymmetric Deformation of Anisotropic
Shells of Revolution"

Kiev, Prikladnaya Mekhanika, Vol 7, No 8, 1971, pp 3-8

Abstract: In the article is set forth an approach to a numerical solution of problems of the statics of axially symmetrical loaded shells of revolution, composed of anisotropic layers of, generally speaking, variable rigidity. It is assumed that the layers of the shell are deformed jointly without slipping and separation and that for the entire packet of the shell the hypothesis of undeformed normals is on the whole valid. At each point of the shell there is but a single plane of elastic symmetry that is parallel to the coordinate surface. The elastic and thermophysical characteristics do not change along the parallel. The derived solving system of ordinary differential equations is integrated by means of a numerical algorithm on an electronic digital computer for arbitrary boundary conditions and loads. Solved as an example is a problem concerning the stressed state of an anisotropic ellipsoidal shell of variable thickness. Two figures, one table, eight references.

1/1

USSR

UDC: 539.311

GRIGORENKO, Ya. M., SUDAVTSOVA, G. K., Kiev

"Spherical-Class Envelopes of Rotation with Local Loads on a Belt"

Kiev, Prikladnaya Mekhanika, Vol 9, No 6, Jun 73, pp 24-30.

Abstract: The problem of the stress-strain state of thin elastic spherical-class envelopes with thickness variable in the meridional direction under the influence of local loads on a belt is studied. The problem is solved by a stable numerical method. The results produced are compared with the precise solution. Using specific examples, the influence of envelope curvature with various degrees of local loading is studied. An example of calculation of a closed ellipsoidal envelope of variable thickness is presented. The maximum stresses in an envelope of variable thickness differ from the stresses in an envelope of constant thickness by less than 1%. The difference for bends is not over 3%, although the weight of the envelope of variable thickness can be reduced by 35%.

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1/2 022 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--DEDUCTION OF EQUATIONS OF EQUILIBRIUM FOR MULTILAYER SHELLS WITH
LAYERS OF VARIABLE THICKNESS -U-
AUTHOR--VASILENKO, A.T., GRIGORENKO, YA.M.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIYA NAUK UKRAINS'KOI RSR, DOPOVIDI, SERIYA A, FIZIKO,
TEKHNICHNI I MATEMATICHNI NAUKI, VOL. 32, FEB. 1970, P. 155-158
DATE PUBLISHED----FEB70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--FRICTION, REINFORCED SHELL STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/0291

STEP NO--UR/0441/70/032/000/0155/0153

CIRC ACCESSION NO--AT0108589

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UNCLASSIFIED

2/2 022
CIRC ACCESSION NO--AT0108589

UNCLASSIFIED

PROCESSING DATE--11SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF A PROCEDURE FOR
DERIVING A CLASS OF EQUATIONS DESCRIBING THE EQUILIBRIUM OF SHELLS
COMPOSED OF SEVERAL LAYERS OF VARIABLE THICKNESS. THE EQUATIONS ARE
APPLICABLE TO MULTILAYER SHELLS IN WHICH INDIVIDUAL LAYERS PERFORM UNDER
LOAD A SIMULTANEOUS WORK WITHOUT FRICTION.

????????????

UNCLASSIFIED

Acc. Nr. **AP0030822** Abstracting Service:
CHEMICAL ABST. **370**Ref. Code
2R0078

60941d The infrared absorption spectra of thiocyanatoberyllates solvated by acetonitrile. Pochkaeva, T. I.; Mikhieva, L. M.; Grigor'ev, A. I.; Ganem, A. (USSR). Zh. Neorg. Khim. 1970, 15(1), 87-91 (Russ). $MBe(NCS)_3 \cdot nMeCN$ (I) and $M_2Be(NCS)_4 \cdot nMeCN$, where $M = Cs, Rb, K$, or NH_4 , were prepd. by conventional metathetical reactions in MeCN. All these compds. have NCS coordinated to Be via N, and I compds. have 1 MeCN coordinated to Be. Presence of bridging NCS was not observed. Frequencies of CS, CN, and NCS are assigned and tabulated.

HMJR *lg*REEL/FRAME
19690818

USSR

UDC 532.516.2

GRIGOREV, B. S.

"Effect of Nonstationarity on the Bearing Capacity of a Sectional Gas Bearing"

Trudy Leningradskogo Politekhnikheskogo Instituta, Aerotermodinamika
(Works of the Leningrad Polytechnical Institute, Aerothermodynamics),
No 313, 1970, pp 117-122

Translation: This article contains a study of the two-dimensional problem for a cylindrical unsupported bearing. One of the slip surfaces (journal or bearing) is separated by axial grooves into a series of sectors. The solution is found in the form of a series with respect to small degrees of relative eccentricity. If the grooves are applied to the stationary surface of the bearing, the bearing capacity is found to be larger than in the case where the grooves are on the rotating journal. On increasing the Garrison number, this difference approaches zero. There are 4 illustrations and a 2-entry bibliography.

1/1

1/2 029

UNCLASSIFIED

PROCESSING DATE--20NGV70

TITLE--EFFECT OF VACUUM ULTRAVIOLET IRRADIATION ON THE SPECTRAL
DISTRIBUTION OF THE PHOTOCONDUCTIVITY OF CADMIUM SULFIDE SINGLE CRYSTALS
AUTHOR--(03)--GRIGOREV, V.R., NCVIKOV, B.V., CHEREDNICHENKO, A.YE.

COUNTRY OF INFO--USSR

SOURCE--VESTIN. Leningrad. Univ., FIZ., KHIM. 1970 (1), 75-9

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--VACUUM UV IRRADIATION, SPECTRAL DISTRIBUTION,
PHOTOCONDUCTIVITY, CADMIUM SULFIDE, SINGLE CRYSTAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--1999/1836

STEP NO--UR/0054/70/000/001/0075/0079

CIRC ACCESSION NO--AP0123625

UNCLASSIFIED

2/2 029

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0123625

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF UV LIGHT AND ELECTRON BOMBARDMENT (3 KEV) ON THE FINE STRUCTURE OF SPECTRAL DISTRIBUTION OF CDS SINGLE CRYSTAL PHOTUCOND. WAS INVESTIGATED AT 80DEGREESK IN VACUUM (LESS THAN OR EQUAL TO 10 NEGATIVE PRIME6 TORR). ADSORBED O INFLUENCES THE SPECTRAL DISTRIBUTION OF PHOTOCURRENT. CHANGES IN THE DARK COND. AND FINE STRUCTURE OF PHOTOCOND. OCCURRING AFTER IRRADN. ARE EXPLAINED BY THE DESPORTION OF O FROM THE SURFACE OF THE CRYSTAL.

UNCLASSIFIED

USSR

UDC 621.397.62:621.317.799

GRIGOREV, V. P., SHIFF, V.P.

"Determining the Frequency Characteristic of the Low-Frequency Part of a Television Receiver Under Noise Effects"

Materialy nauchno-tekhn. konferentsii. Leningr. elektrotekhn. in-t svyazi. Vyp. 3 (Materials of the Scientific and Technical Conference. Leningrad Electrotechnical Communications Institute. Vyp. 3), Leningrad, 1970, pp 344-347 (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8G174)

Translation: This article contains the results of work to determine the frequency characteristics of the electroacoustic part of television receivers class I and II under the effect of noise from the scanning unit. The measurement procedure and results of subjective statistical examination are described.

1/1

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1/2 031 UNCLASSIFIED PROCESSING DATE--15OCT70
TITLE--CHARACTERISTICS OF BLOOD SYSTEM IN THE WORKERS OF SOME NOISY
PROFESSIONS -U-
AUTHOR--(02)--TOKARENKO, I.I., GRIGOREVA, Z.E.
COUNTRY OF INFO--USSR
SOURCE--FIZIOLOGICHNIY ZHURNAL, 1970, VOL 16, NR 3, PP 330-335
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--BLOOD SERUM, INDUSTRIAL HYGIENE, HAZARDOUS SOUND, BLOOD
COAGULATION, LYMPHOCYTE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/1138 STEP NO--UR/0238/70/016/003/0330/0335
CIRC ACCESSION NO--AP0115157
UNCLASSIFIED

2/2 031

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NG--AP0115157

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN PERSONS WORKING UNDER CONDITIONS OF INTENSIVE NOISE (95-144 DB, 800-1600 HZ) SOME CHANGES ARE FOUND IN THE BLOOD MORPHOLOGICAL COMPOSITIONS AND ITS COAGULATION PROPERTIES. THE ACCELERATION OF SEDIMENTATION TEST WAS NOTED IN MEN. THE TENDENCY TO ITS ACCELERATION WAS OBSERVED IN WOMEN. IN WORKERS OF BOTH SEXES THE ERYTHROPENIA AND TENDENCY TO LYMPHOCYTOSIS WERE FOUND. THERE APPEARED NEUTROPENIA IN WOMEN WITH THE LENGTH OF SERVICE MORE THAN 10 YEARS. TOTAL QUANTITY OF LEUCOCYTES, CONTENT OF MONOCYTES AND EOSINOPHILS DID NOT CHANGE. INVESTIGATION OF COAGULOGRAM SHOWED AN INCREASE IN ACTIVITY OF COAGULATING AND ANTICOAGULATING SYSTEMS. THESE SHIFTS IN THE FUNCTIONAL STATE OF BLOOD DEVELOP WITH AND INCREASE IN THE LENGTH OF SERVICE UNDER CONDITIONS OF NOISE, WHICH TESTIFIES TO THEIR PATHOGENOUS CONNECTION WITH THE GIVEN FACTOR. FACILITY: DEPARTMENT OF NORMAL PHYSIOLOGY AND DEPARTMENT OF PROPAEUTICS OF INNER DESEASES, MEDICAL INSTITUTE, ZAPOROZHYE.

UNCLASSIFIED

USSR

ARUTYUNYAN, G. A., GRIGORIN, L. Z., SEROVA, G. A.

"One Physiological Model"

Sb. tr. Zangezursk. lab. Adaptivn. Sistem AN Arm SSSR [Collected Works of the Zangezursk Laboratory of Adaptive Systems, Acad. Sci. ArmSSR (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V880)].

Translation: The mechanism of the physiological theorem outlined in a number of works has no generally accepted quantitative description. The present work presents a description and study of a model which quantitatively describes known, experimental data.

1/1

Radar

USSR

VASIN, VLADIMIR VASIL'YEVICH, VLASOV, OLEG VALERIANOVICH, ~~GRIGORIN-RYABOV~~,
~~VIKTOR VALERIANOVICH~~ DUDNIK, PAVEL IVANOVICH DUDNIK, and STEPANOV, BORIS
MIKHAYLOVICH

"Radar Equipment (Theory and Principles of Construction)" [Radiolokatsionnyye
Ustroystva (Teoriya i Printsipy Postroyeniya)], Moscow, Izd-vo "Sovetskoye
Radio," 1970, 18,500 copies, 680 pages

Abstract: The book presents radar principles, co-ordinate measurement methods,
and scanning. Problems of radar signal detection, the accuracy in measuring
their parameters, and solutions are examined. The principles for constructing
radar equipment of different types are given, as well as their main charac-
teristics are analyzed.

In conclusion, considerations for construction of radar systems, which are
intended for solving concrete problems (aerial and marine target detection,
radar observation of ground objects, etc.) are presented.

The book is intended for students of higher institutes of learning and may
serve as a manual for specialists working in the field of radar. The book
has two tables, 343 figures, and 69 citations.

1/4

USSR

VASIN, VLADIMIR VASIL'YEVICH, et al., "Radar Equipment (Theory and Principles of Construction)" [Radiolokatsionnyye Ustroystva (Teoriya i Printsipy Postroyeniya)], Moscow, Izd-vo "Sovetskoye Radio," 1970, 18,500 copies, 680 pages

The chapter headings are as follows:

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| Chapter 2. Methods of Measuring the Co-ordinates and Speed of Moving Targets | 14 |
| Chapter 3. Characteristics of Radar Targets | 40 |
| Chapter 4. Radar Scanning | 81 |
| Chapter 5. Radar Signal Detection | 96 |
| Chapter 6. Effective Range of Radar Stations | 146 |
| Chapter 7. Resolution of Radar Signals | 167 |
| Chapter 8. Accuracy in Measuring Co-ordinates and Radial Velocities of Targets | 216 |
| Chapter 9. Accuracy and Resolution Capabilities for Determined Angular Target Co-ordinates | 240 |
| Chapter 10. Indicating Output Equipment | 264 |

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USSR

VASIN, VLADIMIR VASIL'YEVICH, et al., "Radar Equipment (Theory and Principles of Construction)" [Radiolokatsionnyye Ustroystva (Teoriya i Printsipy Postroyeniya)], Moscow, Izd-vo "Sovetskoye Radio," 1970, 18,500 copies, 680 pages

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| Chapter 11. | Radar Output Equipment Coupled With Electron Digital Computing Machines | 295 |
| Chapter 12. | Radar Output Equipment for Continuous Target Tracking | 307 |
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| Chapter 13. | Single-Channel Pulsed Radar Stations | 329 |
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Peculiarities of Radar Equipment for Different Purposes

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USSR

VASIN, VLADIMIR VASIL'YEVICH, et al., "Radar Equipment (Theory and Principles of Construction)" [Radiolokatsionnyye Ustroystva (Teoriya i Printsipy Postroyeniya)], Moscow, Izd-vo "Sovetskoye Radio," 1970, 18,500 copies, 680 pages

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| Chapter 20. Primary Types of Ship Radar Stations | 542 |
| Chapter 21. Aircraft and Rocket Radar Equipment Used for Aerial Encounter | 555 |
| Chapter 22. Aircraft Panoramic Radar | 591 |
| Chapter 23. Radar Systems With Active Response | 654 |

UZR

UDC: 621.396.901

GRIGORIN-REABOV, V. V. (editor)

"Radar Devices: (Theory and Design Principles)"

Radiolokatsionnyye ustroystva: (Teoriya i printsipy postroyeniya) (cf. English above), Moscow, "Sov. radio", 1970, 680 pp, ill. 2 r. (from Radiotekhnika, No 12, Dec 70, Abstract No 1261 K)

Translation: The book outlines the principles of radar and methods of measuring coordinates and scanning space. Consideration is given to problems of detecting radar signals, precision in measuring range, direction, and resolution. Light is shed on the principles of scanning radar installations for various purposes, and their basic characteristics are analyzed. Considerations are given on the construction of radar systems designed for solving specific problems: for detecting air and sea targets, for radar observation of land objects, etc. 343 illustrations, 2 tables, bibliography of 69 titles. Resumé.

1/1

GRIGORIYEV, R.

Novel
Wednesday, March 22, 1972

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6

A fundamentally new plasmatron which can generate plasma at a distance has been designed by Soviet scientists

Y. Pruzanov and R. Grigoriyev, Engineers
LIGHT GIVEN SIGN TO PLASMA

Three types of plasma generators (plasmatrons) are known today. Each of them has its merits and demerits. For example, an electric arc produces a plasma concentrated with a localized distribution of products. Other types of plasmatrons are free from this shortcoming but they call for a complicated equipment for energy supply. However, plasma can be engendered only inside such apparatus.

A fundamentally new installation which can generate plasma at a distance has been designed by Moscow scientists--staff members of the Institute of Mechanics of the USSR Academy of Sciences--Yu. I. Raizer, Lenin prize winner, experimental physicist G. I. Korolev, N. A. Generalov, V. P. Zimakov, V. A. Kasukov, A. B. Abalakov.

The new optical device uses for the continuous supply of energy to plasma a laser beam so that no conductors are necessary. In principle, it is possible to light up and support such an "optical" discharge in any place, say, in the middle of a room, or in the street. Plasma can be moved by displacing the ray of light, nozzles can be associated with it. It can even be made to run along the beam to meet a light wave.

At first, a continuously burning optical discharge was obtained with the aid of a small 100-watt laser. The discharge burned in a xenon-filled vessel at pressures of a few atmospheres. Plasma was kindled by another laser which produced short powerful pulses that created sparks in gas. The sparks served as a kind of matches, as it were.

At the moment, in the laboratory of the institute, a continuous optical discharge is burning in any gas, including the air. And in many cases, even at atmospheric pressure. An optical plasmatron can operate without interruption for hours. The temperature reaches 20,000 degrees. Plasma gives off a dazzling white light.

It was recently kindled in a plain glass flask through which argon was allowed to flow slowly. When a worker broke off a piece of glass from the glass sphere by accident, the hole was covered up with a sheet of paper, but the discharge continued its steady burning.

The optical plasmatron will find diverse applications in science and technology. Already, it can be used as a continuous light source of exceptional brightness.

(Vechernyaya Moskva, March 9. Abridged.)

USSR

UDC: 669.15'74-194:620.181.5

GRIGORKIN, V. I., KOROTUSHENKO, G. V., Lipetsk Branch of the Moscow Institute of Steel and Alloys

"Influence of Carbon on the Bainite Conversion Rate of Iron-Manganese Alloys"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 12, 1973, pp 110-112.

Abstract: Earlier works have observed the growth of alpha-phase crystals during isothermal holding in pure iron, Fe-Ni and Fe-Ni-C alloys and in the bainitic conversion of steel. However, no information is available in the literature on the influence of carbon on the isothermal $\gamma \rightarrow \alpha$ conversion in Fe-Mn alloys, which was the subject of this article. The alloys studied (Fe + 5.15% Mn; Fe + 5.05% Mn + 0.21% C and Fe + 5.15% Mn + 0.5% C) were melted in an arc furnace, homogenized in a vacuum, heated to 700-720° C, held for two hours, heated to 1100-1150° C, held for 6 hours, cooled to 500-550° C with the furnace, then in air. The ingots were heated to 1200-1220° C and forged into bars, which were heat treated (1050° C, 30 minutes, water). The kinetics of growth of bainite plates were studied during isothermal holding at the 200-500° C temperature interval. The growth rate of alpha-phase plates was approximately 10^{-2} - 10^{-3} mm/sec for the Fe-Mn alloy, 10^{-3} - 10^{-4} mm/sec for

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USSR

Grigorkin, V. I., Korotushenko, G. V., Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 12, 1973, pp 110-112.

the alloy with 0.21% C and 10^{-4} - 10^{-5} mm/sec for the alloy with 0.5% C.

2/2

USSR

UDC 669.14:539.2:546.26

ZEMSKIY, S. V., LITVINENKO, D. A., GRIGORKIN, V. I., and IZHARSHIKOVA, T. V.,
Central Scientific Research Institute of Ferrous Metallurgy imeni I. P.
Bardin and Lipetsk Affiliate of the Moscow Institute of Steel and Alloys

"Diffusion of Carbon in Alpha-Iron and Steels 17GS and 18KhNVA Containing
Carbides"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy--Chernaya Metallurgiya, No 6,
Jun 73, pp 93-96

Abstract: A method was developed for calculating the diffusion coefficients of carbon in alpha-iron and steels containing a carbide phase in the case of an "instantaneous" source of the substance being diffused onto the sample surface. The coefficients of diffusion of carbon in ferro-iron and 17GS and 18KhNVA steels were determined and the temperature relationship of the diffusion coefficients was found. From the expressions derived for diffusion coefficients it was evident that the combined alloying of ferrite with Mn and Si (17 GS steel) and with Cr, W, and Ni (18KhNVA) leads to a lowering of the diffusion coefficient magnitude and to an increased activation energy of this process. Thus, at 500°C the diffusion coefficients for carbon in 17GS steel are 100 times less, and in steel 18KhNVA, 1000 times less than in pure iron. 3 figures, 7 bibliographic references.

1/1

USSR

UDC 669.15'24-194:539.2191.3

ZEMSKIY, S. V., GRIGORKIN, V. I., ZAKHARENKOVA, V. I., and KUKUSHKINA, V. N.,
Central Scientific Research Institute of Ferrous Metallurgy imeni I. P.
Bardin, Lipets Branch of the Moscow Institute of Steel and Alloys

"Diffusion of Carbon in Ferro-Nickel Steels of Different Composition"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 10,
1972, pp 115-118

Abstract: The diffusion of carbon was investigated on welded pairs of ferro-nickel steel with a Ni content corresponding to extreme concentrations possible in inverse martensitic transformation of low-carbon (0.06% C) steels with 10% Ni and medium-carbon (0.38% C) steels with 18% Ni. The diffusion pairs were prepared from cubic steel specimens into which the radioactive isotope C^{14} was introduced. A method was developed of determining the diffusion coefficients of inclusion admixtures in the three-component system with distinct diffusion coefficients in each half of the welded specimen. The coefficients of carbon diffusion were specified in alloys with 0.38% C and 9, 18, and 27% Ni and in alloys with 0.006% C and 5, 10, and 15% Ni. The temperature dependences of the diffusion coefficient of carbon in Fe-Ni alloys in γ -solid solution were determined. Four figures, ten formulas, five bibliographic references.

1/1

USSR

UDC 569.112.227.3

KOROTUSHENKO, G. V., GRIGORKIN, V. I., CHUKHRIN, L. A., MILYAKOV, A. P.,
KUZ'MINA, T. M., KRIVONOSOVA, L. F.; Murmansk Marine Engineering School,
Lipetskiy Affiliate of Moscow Institute of Steels and Alloys

"Cavitation-Corrosion Resistance of Chrome-Nickel-Tungsten Austenitic Steel"

Kiev, Fiziko-khimicheskaya Mekhanika Materialov, Vol 8, No 4, 1972, pp 92-93.

Abstract: The author s studied the cavitation-corrosion resistance of type 30Kh14N5V austenitic steels made in a vacuum furnace. The tungsten content was varied between 0.5 and 5%. The tendency of the austenite to form deformation martensite with 50% compression and with cavitation was also studied. The studies were performed in a 3% aqueous NaCl solution. The greater the tendency of the austenite toward the formation of both "volumetric" and "surface" martensite, the higher the cavitation-corrosion resistance. The maximum cavitation-corrosion resistance corresponds to the optimal content of tungsten in the steel, approximately 3%. Further increases to 5% cause the resistance and quantity of "surface" and "volumetric" martensite to decrease significantly. The reason for this maximum on the deformation martensite vs. alloy admixture curve has not been established. The steel with the optimal composition for corrosion-cavitation resistance has com-
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USSR

UDC 569.112.227.3

KOROTUSHENKO, G. V., GRIGORKIN, V. I., et. al., Kiev, Fiziko-khimicheskaya Mekhanika Materialov, Vol 8, No 4, 1972, pp 92-93.

paratively low corrosion rate in sea water. The steel with 3% tungsten therefore has the maximum cavitation-corrosion resistance, superior to that of Kh18N10T steel by more than an order of magnitude.

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USSR

UDC: 669.15-194:621.785.2

GRIGORKIN, V.I., KOROTUSHENKO, G.V., KAZADZHAN, L.B., and ZAKHARENKOVA, V.I.,
Lipetsk Branch, Moscow Institute of Steel and Alloys

"Stabilization of Residual Austenite and the Irreversible Friability in Chrome
and Nickel Steels"

Moscow, Izvestiya VUZ -- Chernaya Metallurgiya, No 8, 1971, pp 150-152

Abstract: The results are given of an investigation into the effects of chromium, nickel, and carbon individually on the kinetics of austenite stabilization in steels with various combinations of C, Cr, Ni, Si, Mn, and Ti. There are seven such alloys, and a table of the chemical composition of each is given. The alloys were made in an induction oven, were homogenized for 20 hours at 1200° C, and were forged into ingots weighing 10 kg, which were then roasted. Stabilization kinetics were investigated in dilatometric specimens which were supercooled until the formation of 70% martensite and were then once more heated to 230-450° C and held at that temperature for an hour. The austenization temperature was 980° C. The amount of austenite and martensite were estimated from the curve plotted on a Kantor dilatometer. It was found that the degree of austenite stabilization increased
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USSR

UDC: 669.15-194:621.785.2

GRIGORKIN, V. I., et al, Izvestiya VUZ--Chernaya Metallurgiya, No. 8, 1971, pp 150-152

with an increase in the quantity of martensite; hence a structure of 70% martensite and 30% austenite was chosen for the initial analysis. The degree of residual austenite stabilization was determined from the formula $Q = (n - n')/n$, where Q is the degree of stabilization, expressed in % form, n is the quantity of residual austenite, fixed before the temperature stabilization, and n' is the quantity of residual austenite converted to martensite when cooled to room temperature after the temperature stabilization. Experiments made to check the assumption that the interconnection between the stabilization of the residual austenite and the friability can be attributed to the same cause are described. The nature of this cause is not completely clear. Curves are given for the degree of stabilization of the residual austenite as a function of the tempering temperature for the various steel alloys.

2/2

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1/2 030 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--REDISTRIBUTION OF SULFUR IN TRANSFORMER STEEL -U-
AUTHOR--GRUZIN, P.L., ZEMSKIY, S.V., GRIGORKIN, V.I., MOSKALEVA, L.N.,
SALKOVA, V.K.
COUNTRY OF INFO--USSR
SOURCE--METALLOVED. TERM. OBRAB. METAL. 1970, (2) 16-19
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--TRANSFORMER STEEL, SULFUR, COLD ROLLING, THERMAL DIFFUSION,
RADIOGRAPHY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1988/1310 STEP NO--UR/0129/70/000/002/0016/0019
CIRC ACCESSION NO--AP0106087
UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0106087

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MICRODISTRIBUTION OF S IN TRANSFORMER STEEL WAS STUDIED BY AUTORADIOGRAPHY. TWO CONDITIONS WERE STUDIED, (1) COLD ROLLED FOLLOWED BY DECARBURIZATION HEATING, (2) COLD ROLLED FOLLOWED BY HIGH TEMP. ANNEALING IN H OR VACUUM THEN GIVEN A 2ND COLD ROLL. S IS DISTRIBUTED UNEVENLY, SULFIDES WERE OBSD. EVEN FOLLOWING HIGH TEMP. HEATING. RATIO-METRIC ANAL. OF THE LAYERS SHOWED THAT FOLLOWING HIGH TEMP. ANNEALING, THE CONC. OF S INSIDE THE SHEET WAS LOWERED TO ONE THIRTIETH-ONE TWENTIETH AS COMPARED WITH THE INITIAL WHILE THE SURFACE OF THESE SAME LAYERS (UP TO 5 MU) INCREASED CONC. 5-10 TIMES. THE ENRICHED S LAYER MUST BE REMOVED. THE STUDY OF C AND S DIFFUSION IN TRANSFORMED STEEL SHOWED THAT AT 900DEGREES, THE DIFFUSION OF S PROCEEDS AT ONE TENTH PRIME⁴, AND AT 1200DEGREES, AT ONE TENTH THE TIME OF C DIFFUSION.

UNCLASSIFIED

1/3 024 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--STRUCTURE OF SURFACE LAYERS AND ITS EFFECT ON THE PROPERTIES OF
TRANSFORMER STEEL -U-
AUTHOR--(05)-GRIGURKIN, V.I., MUSKALEVA, L.N., MEDVEDEVA, N.N., ZEMSKIY,
S.V., CHERNENILOV, M.F.
COUNTRY OF INFO--USSR G
SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(2), 297-301
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--X RAY DIFFRACTION ANALYSIS, ELECTRON MICROSCOPY, METAL
ROLLING, TRANSFORMER STEEL, SILICON ALLOY, METAL SURFACE PROPERTY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/1932

STEP NO--UR/0048/70/034/002/0297/0301

CIRC ACCESSION NO--AP0115743

UNCLASSIFIED

2/3 024

UNCLASSIFIED

PROCESSING DATE--090CT70

CIRC ACCESSION NO--AP0115743

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COMPN. AND STRUCTURE OF SURFACE LAYERS AND THE INCIDENCE OF SURFACE IMPURITIES IN TRANSFORMER STEEL STRIP AT VARIOUS STAGES OF MANUF. WERE STUDIED TO DET. THE LONGITUDINAL AND TRANSVERSE DISTRIBUTION OF THE SURFACE FILM ON THE STRIP AND TO FIND MEANS FOR IMPROVING INTEROPERATION DESCALING. LAB. AND INDUSTRIAL SCALE TESTS WERE MADE ON 70 FURNACE HEATS; THE STRIP SPECIMENS WERE EXAMD. CHEM., METALLOGRAPHICALLY, BY X RAY DIFFRACTION, ELECTRON MICROSCOPY, AND RADIOISOTOPES. FAYALITE WAS THE CHIEF COMPONENT OF THE SURFACE LAYER RESPONSIBLE FOR DIFFICULTIES IN CHEM. DESCALING. FOLLOWING ROLLING FROM 2.5 TO 0.6 MM, THE SURFACE LAYERS CONTAINED C3-10, SIO SUB2 1-7, FE SUB2 O SUB3 0.8-1.0, AND FE 82-90PERCENT. THE AMT. OF SCALE AFTER ROLLING DEPENDED ON THE CONSTITUTION OF THE DESCALED SURFACE, AND CONSTITUTED IS SIMILIAR TO 0.65 G-M PRIME2 AFTER THE 1ST COLD ROLLING AND IS SIMILIAR TO 2.85 G-M PRIME2 IN THE FINISHING STAGE. A METALLOGRAPHIC ANAL. OF SPECIMENS SUBJECTED TO HIGH TEMP. ANNEALING IN H, N, AND A VACUUM SHOWED THAT, REGARDLESS OF THE ANNEALING ATM., THE THICKNESS OF THE SURFACE LAYERS WAS 6-80 AND 4-36 MU AT THE EDGES AND IN THE MIDDLE OF THE STRIP, RESP. IN THE ABSENCE OF AN OXIDE SURFACE LAYER THE MAGNETIC INDUCTION WAS 19,200-19,500 G WHILE IN THE PRESENCE OF A THICK LAYER IT WAS SIMILIAR TO 18,700 G. A MATH. ANAL. OF THE DISTRIBUTION CURVES OF C CONC. IN THE METAL AND IN THE OXIDE LAYER SHOWS THAT THE RATE OF C DIFFUSION (OWING TO A DECARBURIZING ANNEAL) IN THE LAYER AT VARIOUS TEMPS. WAS A FACTOR OF 10 PRIME3 TO 10 PRIME6 LESS THAN THOSE IN THE FESI ALLOY.

UNCLASSIFIED

3/3 024
CIRC ACCESSION NO--AP0115743

UNCLASSIFIED

PROCESSING DATE--09OCT70

ABSTRACT/EXTRACT--FACILITY: LIPETSK, FILIAL MOSK. INST. STALI SPLAVOV,
LIPETSK, USSR.

UNCLASSIFIED

89

USSR

UDC 577.158

GRIGOROV, L. N., ZHIVOTCHENKO, V. D., REMENNIKOV, S. M., RUBIN, L. B., and RUBIN, A. B., Biology Soil Faculty, Moscow State University and Physico-technical Institute, Moscow

"Oxidation of Ectothiorhodospira shaposhnikovii Cytochromes Induced by Ruby Laser Flashes"

Moscow, Molekulyarnaya Biologiya, No 5, 1971, pp 744-752

Abstract: Description of a differential spectrophotometer in which pulsed light from a ruby laser can excite photochemical or photobiological objects. The sensitivity of the device is about 10^{-4} units of optical density with a time resolution of about 10^{-7} sec. This device was used to study the oxidation of Ectothiorhodospira shaposhnikovii cytochrome C induced by a ruby laser 25 nanosecond flashes. Under aerobic conditions the kinetics of the oxidation process was exponential, whereas under anaerobic conditions it was the sum of two exponential components. Under both conditions complete oxidation of the cytochromes required at least two successive laser flashes at intervals of $3 \cdot 10^{-4}$ sec.

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USSR

UDC 621.385.623.5

BRODULENKO, I.I., GALANIN, A.K., GRIGOROV, N.K., ROZE, YE. A., VOVNENKO, V.L.,
SHMELEV, A. YE.

"Reflex Klystrons With Interchangeable Resonators"

Elektron. tekhnika. Nauch.-tekhn. sb. Elektron. SVCh (Electronics Technology.
Scientific-Technical Collection. Microwave Electronics), 1971, Issue 5, pp 74-82
(from RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10A165)

Translation: The paper considers glass and metalceramic reflex klystrons with interchangeable [sⁿyemnyy] resonators, which operate in the shortwave part of the centimeter range of wave lengths with output powers up to 0.5 watt. Metalceramic klystrons with interchangeable resonators assure high output electrical parameters and in comparison with glass klystrons are more resistant to mechanical and climatic effects and are also more promising during utilization of the shortwave part of the centimeter range of wavelengths. Summary.

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Nuclear Physics

USSR

UDC 537.591.1

VERNOV, S. N., GRIGOROV, N. L., LIKIN, O. B., LOGACHEV, Yu. I., FISARENKO, N.F.,
SAVENKO, I. A., VOLODICHEN, N. N., and SUSLOV, A. A., Scientific Research
Institute of Nuclear Physics, Moscow State University.

"Studies of Cosmic Radiation Aboard the Prognoz Satellites"

Moscow, Izvestiya Akademii Nauk SSSR, Fizika; Vol 37, No 6, 1973, pp 1138-1143

Abstract: Two Prognoz satellites were launched in April and June of 1972 into orbits with the following parameters: apogee -- 200,000 kilometers, perigee -- 950 kilometers, angle of inclination 65° . The satellites were launched toward the sun, the angles between projections of the apsides and the orbit through the plane of the ecliptic and the direction of the sun being 22 and 23 degrees, respectively. The angle between projections of the apsides of the two satellites was 77° in July 1972. The satellites served about six months each. Although they were in orbit during the decline in the 11-year solar cycle, their first months of observation coincide with an anomalous increase in solar activity. Background radiation was almost never recorded in these months. From April through September 1972, interplanetary space was filled with intensive streams of solar protons at energies of about 1 Mev. Higher energy protons were observed only during the August flares. The electron flow

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VERNOV, S. N., et al., Izvestiya Akademii Nauk SSSR, Fizika; Vol 37, No 6, pp 1138-1143

that this represented a magnetic "trap" with dimensions of approximately 0.1 au, traveling at approximately 2500 kilometers per second; the absence of any nucleons with $Z \geq 6$ indicates that the particles must all have been of solar origin.

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APPROVED FOR RELEASE: 09/01/2001

CIA-RDP86-00513R002201020004-0"

VERNOV, S. N., et al., Izvestiya Akademii Nauk SSSR, Fizika; Vol 37, No 6, 1973, pp 1138-1143

was well correlated with the protons. Absorbed radiation dose during this interval, except for 2-7 August, was steady at approximately 24 mrad per day.

Calculations from the uniform nature of the declines in intensity of solar proton activity indicate that the absorbing layer is at a distance of approximately two astronomical units from the sun. It is remarkable that the state of interplanetary space remained the same over a long interval, in spite of substantial manifestations of solar activity; when perturbed, it recovered rapidly.

Increases in electron flow were observed several times without any corresponding increase in proton output, but every increase in proton output from the sun was accompanied by an increase in electron flow.

During intervals of low solar activity, the detectors which determined these correlations established a strong negative correlation between the counts of extra-solar protons at over 30 Mev and electrons under 500 kev.

The satellites recorded the intense solar activity of early August. An interesting phenomenon was the sharp increase in the flow of particles at all energies over the course of 2.5 hours early on 5 August. The peaks in the curves had particularly steep leading and trailing edges. It is theorized

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Acc. Nr.: AP0042566

Ref. Code: UR0293

Gamma Quanta with Energy Greater than 50 MeV in Cosmic Radiation

(Abstract: "Measurements of Fluxes of Gamma Quanta with Energies Greater than 50 MeV in Primary Cosmic Radiation on the 'Kosmos-208' Artificial Earth Satellite," by L. S. Bratolyubova-Tsulukidze, N. L. Grigorov, L. F. Kalinkin, A. S. Melioranskiy, Ye. A. Pryakhin, I. A. Savenko and V. Ya. Yufarkin; Moscow, Kosmicheskiye Issledovaniya, Vol VIII, No 1, 1970, pp 136-139)

The artificial earth satellite "Kosmos-208" carried a telescope of Cerenkov counters with radiators of Plexiglas and lead glass, surrounded by a scintillator for protection against the background of charged particles, for measuring the fluxes of cosmic γ -quanta with energies greater than 50 MeV. There is a dependence between the counting rate of γ -quanta and geographic latitude, probably related for the most part to imitations of γ -radiation by charged particles. The article gives the values of the total intensities of γ -quanta for the high and equatorial latitudes. The latter data, interpreted as the upper limits of the fluxes of primary γ -rays, are $(1.0 \pm 0.4) \cdot 10^{-4}$, $(6 \pm 3) \cdot 10^{-5}$ and $(1.0 \pm 1.0) \cdot 10^{-5}$ ($\text{cm}^2 \cdot \text{sec} \cdot \text{sterad}^{-1}$) for $E_\gamma \gg 50, 90$ and 146 MeV respectively. Within the limits of error these results agree with the data obtained using the artificial satellite OSO-III.

Reel/Frame

19760544

1/2 031 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--EFFECTIVE CROSS SECTIONS OF INELASTIC PROTON INTERACTION WITH
CARBON AND HYDROGEN NUCLEI IN THE 20-600 GEV REGION MEASURED AT THE
AUTHOR--(05)-SAVENKO, I.A., GRIGOROV, N.L., NESTEROV, V.YE., RAPOPORT,
I.D., SURIDIN, G.A.
COUNTRY OF INFO--USSR

SOURCE--YAD. FIZ. 1970, 11(4), 814-29

DATE PUBLISHED-----70

SUBJECT AREAS--SPACE TECHNOLOGY, PHYSICS

TOPIC TAGS--PROTON INTERACTION, CARBON, HYDROGEN, NUCLEUS, INELASTIC
INTERACTION/(U)PROTON 3 SCIENTIFIC SATELLITE, (U)PROTON 2 UNMANNED
LABORATORY, (U)PROTON 1 UNMANNED LABORATORY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3007/1078

STEP NO--UR/0367/70/011/004/0814/0829

CIRC ACCESSION NO--AP0136498

UNCLASSIFIED